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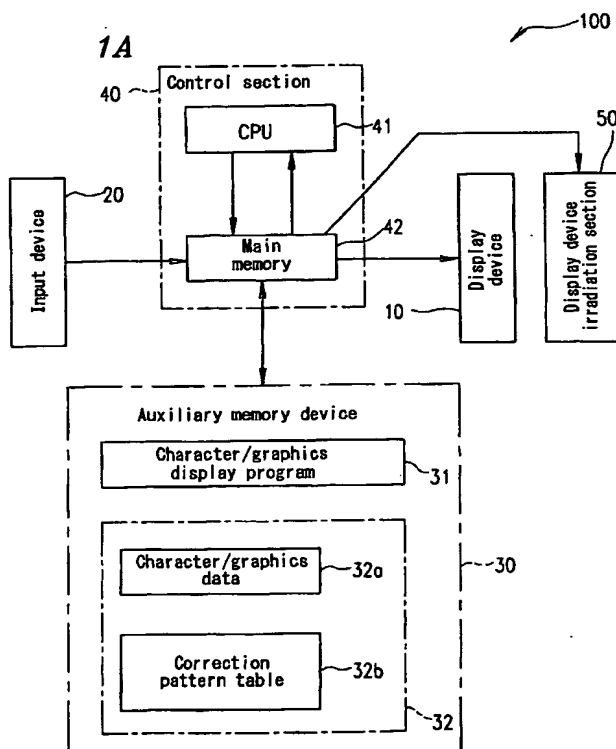
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(54) Title: DISPLAY APPARATUS FOR VARYING DISPLAY OF CHARACTER ATTRIBUTES IN RESPONSE TO BRIGHT-
NESS OF BACKLIGHT OR VIEWER PREFERENCES



(57) Abstract: A display apparatus is provided, which comprises a display device including a display screen for displaying characters and/or graphics, in which each of the characters and/or graphics contains a basic portion and a neighboring portion arranged in the vicinity of the basic portion. A control section controls the display device and sets a luminance level of the sub-pixels of which basic portion is comprised and a luminance level of sub-pixels of the neighboring portion in accordance with the level of intensity of light for irradiating the display screen. The display screen may be irradiated via a backlight, front light or side light. The display device may also be controlled in response to information about the user, i.e. whether the user is visually impaired as a result of e.g. cataracts.



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G09G5/24 G09G5/28 G09G3/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1 158 485 A (SHARP KK) 28 November 2001 (2001-11-28) cited in the application paragraph '0109! - paragraph '0111! paragraph '0283! - paragraph '0286! paragraph '0297! - paragraph '0298!; figures 1-7, 36-38	1-13, 16-21
Y	EP 0 883 103 A (THOMSON MULTIMEDIA SA) 9 December 1998 (1998-12-09) page 2, column 2, line 29 -page 3, column 3, line 33; figures 2,3 page 3, column 3, line 47 -page 3, column 3, line 58 -/--	1-9, 11-13, 16-23

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 907 158 A (SHARP KK) 7 April 1999 (1999-04-07) paragraph '0045! - paragraph '0046! paragraph '0083! - paragraph '0084! paragraph '0118!; figures 3,5,6D ----	1-10, 16-23
Y	US 5 398 022 A (LIPP RONALD L) 14 March 1995 (1995-03-14) column 1, line 65 -column 2, line 29 column 3, line 41 -column 4, line 23; figures 1,2 ----	13
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Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 21, 3 August 2001 (2001-08-03) & JP 2001 100725 A (SHARP CORP), 13 April 2001 (2001-04-13) cited in the application abstract ----	1-23
Y	WINKLER R ET AL: "READABILITY OF ELECTRONIC DISPLAYS" PROCEEDINGS OF THE SID, SOCIETY FOR INFORMATION DISPLAY. PLAYA DEL REY, CA, US, vol. 21, no. 4, 1980, pages 309-313, XP009020838 page 311, right-hand column, paragraph 4 -page 312, left-hand column, paragraph 7 ----	14,15, 24-41
Y	US 5 475 399 A (BORSUK SHERWIN M) 12 December 1995 (1995-12-12) column 1, line 8 -column 1, line 18 column 4, line 49 -column 5, line 25; figures 2,3 column 7, line 66 -column 8, line 12 ----	24-41
A	----- -/--	14,15

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>CHANGYUAN HU ET AL: "Automatic synthesis of contrast controlled grayscale characters with component-based parametrisable fonts" IMAGE PROCESSING, 1999. ICIP 99. PROCEEDINGS. 1999 INTERNATIONAL CONFERENCE ON KOBE, JAPAN 24-28 OCT. 1999, PISCATAWAY, NJ, USA, IEEE, US, 24 October 1999 (1999-10-24), pages 348-351, XP010368715 ISBN: 0-7803-5467-2 page 349, left-hand column, paragraph 3 -page 349, right-hand column, paragraph 4 page 351, left-hand column, paragraph 1 -page 351, left-hand column, paragraph 2; figures 3,4,6</p> <p>-----</p>	14,15, 24-41
A	<p>US 5 406 305 A (SHIGETA TERUAKI ET AL) 11 April 1995 (1995-04-11) cited in the application column 4, line 42 -column 5, line 8 column 9, line 9 -column 9, line 16; figures 1,4</p> <p>-----</p>	1-3, 7-10, 16-23

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/JP 03/08935

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
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4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-13,16-23

A display apparatus in which the control section sets the luminance level of the basic portion and the luminance of the neighboring portion in accordance with the intensity of light for irradiating the display screen

2. Claims: 14,15,24-41

A display apparatus in which the control section sets the luminance level of the basic portion and the luminance of the neighboring portion in accordance with information related to a viewer of the display device.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 03/08935

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